

# **Do Children Benefit from Increasing Cigarette Taxes? Accounting for the Endogeneity of Health and Environmental Tobacco Smoke Exposure**

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My research investigates the relationship between environmental tobacco smoke (ETS) exposure and lung function in children. Using data from the Third National Health and Nutrition Examination Survey, I exploit State-level variation in cigarette excise taxes to estimate the effect of exposure on a child's serum cotinine level, a biomarker for ETS exposure. Instrumental variables estimates of ETS's effect on lung function are then produced using predicted exposure. The elasticity of exposure with respect to taxes ranges from  $-0.28$  to  $-0.94$ . The results suggest a 10% increase in ETS exposure, which decreases lung performance in children by 0.1%– 1.8% depending on the lung measure.

The exposure of children to ETS is a particularly important public health issue because exposure is generally preventable. Although laws exist to regulate ETS in workplaces and public areas, the major avenues of exposure for children—private dwellings and vehicles—are unregulated. Researchers report that the level of a biomarker for ETS exposure, serum cotinine, has declined more rapidly in nonsmoking adults than in children over a 10-year period in the United States. Although adults continue to have relatively higher average levels of exposure to ETS, children's exposure has declined at a lower rate.

In light of the difficulty of regulating major avenues of children's exposure, my research provides decision-makers with new evidence of the effectiveness of a price mechanism's (cigarette taxes) role in reducing ETS exposure in adolescent children.

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